Year 2004

Air Quality Division

ANNUAL AIR EMISSIONS INVENTORY QUESTIONNAIRE

For Facilities Permitted to Operate Boilers

Instructions

The 2004 Annual Emissions Inventory Questionnaire includes 4 forms that are required to be completed and submitted to the Air Quality Division. Instructions for each form are included below. Upon completion, submit the forms along with the signature by the Responsible Official of the facility within 90 days of receipt of a letter from the Department.

FORM 1: Facility General Information

SECTION I thru III: Complete all fields as requested.

FORM 2: Equipment, Process & Stack Data

Table 1: List all the boilers and generators that are operated at the facility. Include the Authorization To Operate (ATO) number for all the permitted equipment. Indicate, if not available.

Table 2: List details of each stack on the equipment.

FORM 3A & 3B: Emissions Data

Based on the fuel used (Gasoline, Diesel, or Natural Gas/Liquid Propane), choose the appropriate table to input the equipment heat input rate and hours operated in the year 2004 for each boiler. Depending on the fuel used for the generator input the horsepower and hours of operation. ***Once data is inputted the formulas are set to complete the calculations. Therefore, do not move or change any of the fields or columns.*** A sample of the calculations are provided on Form 2 for anyone who downloads the PDF file as they will have to complete the calculations.

FORM 4: Summary & Certification

A summarization of all the emissions by each pollutant will be listed within this form. All reports submitted to the Department should be certified true and accurate by the Responsible Official of the facility. This person is the owner or operator of the facility. **If there is a change of the Responsible Official of the facility, please notify the Department with an additional letter stating so.**

The completed questionnaire should be submitted to the following address:

Arizona Department of Environmental Quality
Attention: Darlene Celaya, Emission Inventory Team
Air Quality Division, Compliance Section 3415A-3
1110 West Washington Street
Phoenix, AZ 85007

If you have any question or have difficulty completing this form, please contact Darlene Celaya at (602) 771-7662.

FORM 1: FACILITY GENERAL INFORMATION **YEAR 2004**

SECTION I: ***Plant Identification & Mailing Information***

Customer Name: _____

Place Name: _____ Place ID: _____

Mailing Address: _____ City: _____ State: _____ Zip: _____

County: _____

Phone: _____ Fax: _____

Permit Number: _____ General Permit: Yes No

SECTION II: ***EI Contact***

EI Contact Name: _____ Title: _____

Telephone: _____ Fax: _____

SECTION III: ***Confidential Request***

Pursuant to Arizona Revised Statues §49-432 and §49-201, do you claim the Emissions Inventory data submittal confidential. If yes include which portions of the inventory are confidential along with a brief explanation:

Yes □
No □

FORM 2: EQUIPMENT, PROCESS & STACK DATA	YEAR 2004

Table 1: Equipment List

	Boiler #1	Boiler #2	Boiler #3	Boiler #4	Generator #1	Generator #2
Equipment ID						
ATO#						
Rated Capacity						
Actual Hours Operated (hours/year)						

Table 2: Stack Information

	Stack #1	Stack#2	Stack #3	Stack #4	Stack #5	Stack #6
Height (feet)						
Diameter (feet)						
Velocity (feet/second)						
Exhaust Gas Temperature (F)						
Flow Rate (actual cubic feet per minute)						

Sample Emission Calculation: Emissions = $\frac{\text{Maximum Heat Input Rate (MM Btu per hr) x Hours of Operation (hrs) x Emission Factor (pounds per MM Btu per hr)}}{\text{2000 pounds per ton}}$

For a Boiler with a manxiumum heat input rate of 20MM Btu per and using Natural Gas fuel and operated for 1500 hours during the year 2004, the emissions of Nitrogen Oxides (Nox) will be as follows:

Emissions = $\frac{\text{20 MM Btu per hr x 1500 hours x 0.0952 pounds per MM Btu per hr}}{\text{2000 pounds per ton}}$ = 1.428 tons per year

FORM 3A: EMISSIONS CALCULATIONS FOR BOILERS **YEAR 2004**

FUEL - NATURAL GAS *Conversion Factor - MM = 1,000,000 M = 1,000*

	Boiler #1				Boiler #2			
Pollutants	(1) Max. Heat Input Rate MM Btu/hour	(2) Operational Hours hours/year	(3) Emission Factor pounds/MM Btu	Emissions = (1)x(2)x(3)/2000 tons/year	(4) Max. Heat Input Rate MM Btu/hour	(5) Operational Hours hours/year	(6) Emission Factor pounds/MM Btu	Emissions = (4)x(5)x(6)/2000 tons/year
Particulate Matter <10 microns (PM10)			0.00724				0.00724	
Particulate Matter (PM)			0.00724				0.00724	
Carbon Monoxide (CO)			0.08				0.08	
Volatile Organic Compounds (VOC)			0.00524				0.00524	
Sulfur Oxides (SOx)			0.000571				0.000571	
Nitrogen Oxides (NOx)			0.0952				0.0952	

FUEL - BUTANE

	Boiler #1				Boiler #2			
Pollutants	(1) Max. Heat Input Rate MM Btu/hour	(2) Operational Hours hours/year	(3) Emission Factor pounds/MM Btu	Emissions = (1)x(2)x(3)/2000 tons/year	(4) Max. Heat Input Rate MM Btu/hour	(5) Operational Hours hours/year	(6) Emission Factor pounds/MM Btu	Emissions = (4)x(5)x(6)/2000 tons/year
Particulate Matter <10 Microns (PM10)			0.00616				0.00616	
Particulate Matter (PM)			0.00616				0.00616	
Carbon Monoxide (CO)			0.037				0.037	
Volatile Organic Compounds (VOC)			0.00411				0.00411	
Nitrogen Oxides (NOx)			0.216				0.216	

FORM 3A: EMISSIONS CALCULATIONS FOR BOILERS **YEAR 2004**

FUEL - DIESEL *Conversion Factor - MM = 1,000,000 M = 1,000*

	Boiler #1				**Boiler #2**			
Pollutants	(1) Max. Heat Input Rate MM Btu/hour	(2) Operational Hours hours/year	(3) Emission Factor pounds/MM Btu	Emissions = (1)x(2)x(3)/2000 tons/year	(4) Max. Heat Input Rate MM Btu/hour	(5) Operational Hours hours/year	(6) Emission Factor pounds/MM Btu	Emissions = (4)x(5)x(6)/2000 tons/year
Particulate Matter <10 microns (PM10)			0.00788				0.00788	
Particulate Matter (PM)			0.0146				0.0146	
Carbon Monoxide (CO)			0.0365				0.0365	
Volatile Organic Compounds (VOC)			0.00146				0.00146	
Sulfur Oxides (SOx)			1.07				1.07	
Nitrogen Oxides (NOx)			0.146				0.146	

FUEL - PROPANE

	Boiler #1				**Boiler #2**			
Pollutants	(1) Max. Heat Input Rate MM Btu/hour	(2) Operational Hours hours/year	(3) Emission Factor pounds/MM Btu	Emissions = (1)x(2)x(3)/2000 tons/year	(4) Max. Heat Input Rate MM Btu/hour	(5) Operational Hours hours/year	(6) Emission Factor pounds/MM Btu	Emissions = (4)x(5)x(6)/2000 tons/year
Particulate Matter <10 Microns (PM10)			0.00663				0.00663	
Particulate Matter (PM)			0.00663				0.00663	
Carbon Monoxide (CO)			0.0354				0.0354	
Volatile Organic Compounds (VOC)			0.00331				0.00331	
Nitrogen Oxides (NOx)			0.21				0.21	

FORM 3B: EMISSIONS CALCULATIONS FOR GENERATORS YEAR 2004

FUEL - GASOLINE *Conversion Number - 1 kw = 1.3410 horsepower*

	Generator #1				Generator #2			
Pollutants	(1) Max. Capacity horsepower	(2) Operational Hours hours/year	(3) Emission Factor pounds/hp-hour	Emissions = (1)x(2)x(3)/2000 tons/year	(4) Max. Capacity horsepower	(5) Operational Hours hours/year	(6) Emission Factor pounds/hp-hour	Emissions = (4)x(5)x(6)/2000 tons/year
Particulate Matter <10 microns (PM10)			0.00072				0.00072	
Particulate Matter (PM)			0.00072				0.00072	
Carbon Monoxide (CO)			0.44				0.44	
Volatile Organic Compounds (VOC)			0.022				0.022	
Sulfur Oxides (SOx)			0.00059				0.00059	
Nitrogen Oxides (NOx)			0.011				0.011	

FUEL - NATURAL GAS OR LIQUID PROPANE GAS

	Generator #1				Generator #2			
Pollutants	(1) Max. Capacity horsepower	(2) Operational Hours hours/year	(3) Emission Factor pounds/hp-hour	Emissions = (1)x(2)x(3)/2000 tons/year	(4) Max. Capacity horsepower	(5) Operational Hours hours/year	(6) Emission Factor pounds/hp-hour	Emissions = (4)x(5)x(6)/2000 tons/year
Particulate Matter <10 Microns (PM10)			0.0000726				0.0000726	
Particulate Matter (PM)			0.0000726				0.0000726	
Carbon Monoxide (CO)			0.0029				0.0029	
Volatile Organic Compounds (VOC)			0.000842				0.000842	
Sulfur Oxides (SOx)			0.00000435				0.00000435	
Nitrogen Oxides (NOx)			0.0206				0.0206	

FORM 3B: EMISSIONS CALCULATIONS FOR GENERATORS YEAR 2004

FUEL - DIESEL CAPACITY - Greater Than 600 Horsepower *Conversion Number - 1 kw = 1.3410 horsepower*

	Generator #1				Generator #2			
Pollutants	(1) Max. Capacity horsepower	(2) Operational Hours hours/year	(3) Emission Factor pounds/hp-hour	Emissions = (1)x(2)x(3)/2000 tons/year	(4) Max. Capacity horsepower	(5) Operational Hours hours/year	(6) Emission Factor pounds/hp-hour	Emissions = (4)x(5)x(6)/2000 tons/year
Particulate Matter <10 Microns (PM10)			0.0007				0.0007	
Particulate Matter (PM)			0.0007				0.0007	
Carbon Monoxide (CO)			0.0055				0.0055	
Volatile Organic Compounds (VOC)			0.0007				0.0007	
Sulfur Oxides (SOx)			0.0065				0.0065	
Nitrogen Oxides (NOx)			0.024				0.024	

FUEL - DIESEL CAPACITY - Less Than or Equal to 600 Horsepower

	Generator #1				Generator #2			
Pollutants	(1) Max. Capacity horsepower	(2) Operational Hours hours/year	(3) Emission Factor pounds/hp-hour	Emissions = (1)x(2)x(3)/2000 tons/year	(4) Max. Capacity horsepower	(5) Operational Hours hours/year	(6) Emission Factor pounds/hp-hour	Emissions = (4)x(5)x(6)/2000 tons/year
Particulate Matter <10 Microns (PM10)			0.0022				0.0022	
Particulate Matter (PM)			0.0022				0.0022	
Carbon Monoxide (CO)			0.0067				0.0067	
Volatile Organic Compounds (VOC)			0.0025				0.0025	
Sulfur Oxides (SOx)			0.002				0.002	
Nitrogen Oxides (NOx)			0.031				0.031	

FORM 4: SUMMARY & CERTIFICATION	YEAR 2004

Total all the emissions for each pollutant and enter in the table below.

Pollutant	Tonnage (tons per year)
Particulate Matter (PM)	
Particulate Matter Less Than 10 Microns (PM10)	
Nitrogen Oxides (NOx)	
Sulfur Oxides (SOx)	
Volate Organic Compounds (VOC)	
Carbon Monoxide (CO)	

Certification of Truth & Accuracy

I certify that I have knowledge of the facts set forth in this questionnaire, and that the same are true, accurate and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by the Arizona Department of Environmental Quality as public record.

Signature of Responsible Official: _____ Date: _____

Print Name: _____

Title: _____